LISTING OF CLAIMS

Claims 1-52: (canceled)

Claim 53: (withdrawn) A transdermal formulation for improving memory and cognitive function comprising:

an inert carrier having from about 0.01 % w/w to about 20% w/w of huperzine admixed therewith, and including a permeation enhancer selected from the group consisting of: fatty acids, fatty acid esters, fatty alcohols, amides, pyrrolidones, glycerol triesters, terpenes, their salts, and mixtures thereof, wherein said formulation provides a huperzine blood plasma level of from about 0.1 ng/ml to about 30 ng/ml, upon administration to a subject.

Claim 54: (withdrawn) The transdermal formulation of claim 53, wherein the blood plasma level attained is from about 0.5 to about 15 ng/ml.

Claim 55: (withdrawn) The transdermal formulation of claim 53, wherein the blood plasma level is achieved within about 0.5 to about 48 hours after administration of the formulation.

Claim 56: (withdrawn) The transdermal formulation of claim 53, wherein a single dose is sufficient to sustain the huperzine blood plasma level for a duration of at least about 3 days.

Claim 57: (withdrawn) The transdermal formulation of claim 53, wherein a single dosage is sufficient to sustain the huperzine blood plasma level for a duration at least about 7 days.

Claim 58: (withdrawn) The transdermal formulation of claim 53, wherein the huperzine is a member selected from the group consisting of huperzine A, huperzine B, huperzine X, and salts, analogs, derivatives, prodrugs, and mixtures thereof.

Claim 59: (withdrawn) The transdermal formulation of claim 58, wherein the huperzine is huperzine A.

Claim 60: (withdrawn) The transdermal formulation of claim 58, wherein the huperzine is huperzine B.

Claim 61: (withdrawn) The transdermal formulation of claim 58, wherein the huperzine is huperzine X.

Claim 62: (withdrawn) The transdermal formulation of claim 53, wherein the inert carrier comprises a pressure sensitive adhesive, and the formulation is an adhesive matrix patch.

Claim 63: (withdrawn) The transdermal formulation of claim 53, wherein the inert carrier is a liquid reservoir, and the formulation is a liquid reservoir system.

Claim 64: (withdrawn) The transdermal formulation of claim 53, wherein the formulation is a topical formulation.

Claim 65: (withdrawn) The transdermal formulation of claim 53, wherein the permeation enhancer is selected from the group consisting of: a terpene compound, lauromide DEA, glycerol monooleate, sorbitan monooleate, lauryl alcohol, triacetin, cineole, oleic acid, and mixtures thereof.

Claim 66: (withdrawn) The transdermal formulation of claim 53, wherein said huperzine further comprises a huperzine hybrid compound.

Claim 67: (withdrawn) The transdermal formulation of claim 66, wherein said huperzine

hybrid compound is a huperzine-tacrine hybrid.

Claim 68: (withdrawn) The transdermal formulation of claim 53, further comprising a hormone admixed with the carrier.

Claim 69: (withdrawn) The transdermal formulation of claim 53, wherein the hormone is a member selected from the group consisting of estrogens, androgens, melatonin, seratonin, DHEA, phosphatidyl serine, and mixtures thereof.

Claim 70: (withdrawn) The transdermal formulation of claim 69, wherein the hormone is estrogen.

Claim 71: (withdrawn) The transdermal formulation of claim 53, further comprising a treatment agent selected from the group consisting of antipsychotics, anxiolytics, antidepressants, and mixtures thereof.

Claim 72: (withdrawn) The transdermal formulation of claim 71, wherein the treatment agent is an antipsychotic.

Claim 73: (withdrawn) The transdermal formulation of claim 71, wherein the treatment agent is an anxiolytic.

Claim 74: (withdrawn) The transdermal formulation of claim 71, wherein the treatment agent is an antidepressant.

Claim 75: (withdrawn) The transdermal formulation of claim 53, further including a positive health benefit imparting substance selected from the group consisting of: vitamins, amino acids, anti-oxidants, and mixtures thereof.

Claim 76: (withdrawn) The transdermal formulation of claim 75, wherein the positive health benefit imparting substance is a vitamin.

Claim 78: (withdrawn) The transdermal formulation of claim 75, wherein the positive health benefit imparting substance is an amino acid.

Claim 79: (withdrawn) The transdermal formulation of claim 75, wherein the positive health benefit imparting substance is an anti-oxidant.

Claim 80: (withdrawn) A transdermal formulation for improving memory and cognitive function consisting essentially of:

a mixture of an inert carrier and huperzine in an amount of from about 0. 01% w/w to about 20% w/w, which provides a huperzine blood plasma level of from about 0.1 to about 30 ng/ml upon administration to a subject.

Claim 81: (currently amended) A method of improving memory and cognitive function in a subject, comprising:

transdermally administering ~~a~~ huperzine ~~formulation~~ to the subject from a transdermal matrix patch that includes an adhesive matrix with an acrylate polymer or rubber-based pressure sensitive adhesive, including homopolymers, copolymers, or terpolymers, thereof and a permeation enhancer, excluding Azone, and selected from the group, consisting of: fatty acids, fatty acid esters, fatty alcohols, fatty acid esters of lactic acid, fatty acid esters of glycolic acid, amides, amines, pyrrolidones, glycerol triesters, terpenes, their salts, and mixtures thereof, ~~which~~ in order to provides a huperzine blood plasma level of from about 0.1 to about 30 ng/ml.

Claim 82: (previously presented) The method of claim 81, wherein the huperzine is a member selected from the group consisting of huperzine A, huperzine B, huperzine X, and salts,

analogs, ~~derivatives,~~ prodrugs, and mixtures thereof.

Claim 83: (previously presented) The method of claim 81, wherein the blood plasma level is from about 0.5 to about 15 ng/ml.

Claim 84: (previously presented) The method of claim 81, wherein the huperzine blood plasma level is attained within about 0.5 to about 48 hours after initiation of the huperzine administration.

Claim 85: (previously presented)The method of claim 81, wherein the huperzine blood plasma level is sustained for a duration of at least 3 days from a single transdermal administration.

Claim 86: (previously presented) The method of claim 81, wherein the huperzine blood plasma level is sustained for a duration of at least 7 days from a single transdermal administration.

Claim 87: (currently amended) ~~The method of claim 81, further comprising~~ A method of improving memory and cognitive function in a subject, comprising:

transdermally administering a huperzine formulation with a hormone to the subject which provides a huperzine blood plasma level of from about 0.1 to about 30 ng/ml.

Claim 88: (previously presented) The method of claim 81, wherein the hormone is a member selected from the group consisting of estrogens, androgens, melatonin, seratonin, DHEA, phosphatidyl serine, and mixtures thereof.

Claim 89: (previously presented) The method of claim 88, wherein the hormone is estrogen.

Claim 90: (currently amended) ~~The method of claim 81, further comprising~~ A method of improving memory and cognitive function in a subject, comprising:

transdermally administering a huperzine formulation with a treatment agent selected from the group consisting of antipsychotics, anxiolytics, antidepressants, and mixtures thereof, to the subject which provides a huperzine blood plasma level of from about 0.1 to about 30 ng/ml.

Claim 91: (previously presented) The method of claim 90, wherein the treatment agent is an antipsychotic.

Claim 92: (previously presented) The method of claim 90, wherein the treatment agent is an anxiolytic.

Claim 93: (previously presented) The method of claim 90, wherein the treatment agent is an antidepressant.

Claim 94: (currently amended) The method of claim 90, further comprising transdermally co-administering a positive health benefit imparting substance selected from the group consisting of: vitamins, amino acids, anti-oxidants, and mixtures thereof.

Claim 95: (previously presented) The method of claim 94, wherein the positive health benefit imparting substance is a vitamin.

Claim 96: (previously presented) The method of claim 94, wherein the positive health benefit imparting substance is an amino acid.

Claim 97: (previously presented) The method of claim 94, wherein the positive health benefit imparting substance is an anti-oxidant.

Claim 98: (new) The method of claim 81, wherein the permeation enhancer is a member selected from the group consisting of: glycerol monolaurate, glycerol monolinoleate, glycerol monooleate, isopropyl myristate, isopropyl palmitate, methyl laurate, lauric acid, lauryl alcohol, lauryl lactate, oleic acid, sorbitan monolaurate, sorbitan monooleate, triacetin, terpenes, or mixtures thereof.

Claim 99: (new) The method of claim 98, wherein the permeation enhancer is lauryl alcohol.

Claim 100: (new) The method of claim 98, wherein the permeation enhancer is lauryl lactate.

Claim 101: (new) The method of claim 98, wherein the permeation enhancer is glycerol monolaurate.

Claim 102: (new) The method of claim 81, wherein the transdermal patch comprises an acrylic adhesive matrix patch.